a. coating paramagnetic particles or beads with a first antibody or antibody fragment directed against a second antibody or antibody fragment;

b. incubating the second antibody or antibody fragment with the cell suspension to bind the second antibody or antibody fragment with the target cell, thereby creating a cell mixture, wherein the second antibody or antibody fragment is directed against a membrane structure specifically expressed on the target cell and not on a non-target cell in the cell mixture;

c. washing the cell mixture to remove unbound second antibody or antibody fragment;

d. mixing the coated paramagnetic particles or beads with the washed cell mixture;

e. incubating the washed cell mixture and the coated paramagnetic particles under gentle rotation at about 4°C until target cell-bead rosettes are formed; and

f. visually detecting the target cell-bead rosettes after incubation.

J1 cont K1

39. (Twice Amended) The method of claim 22, wherein the second antibody or antibody fragment is directed against fibronectin receptor, β-integrin, vitronectin receptor, αγß3-integrin, P-seletin including GMP-140, CD44-variants, N-CAM including CD-56, E-cadherin, Le^Y, carcinoembryonic antigen or CEA, EGF receptor, c-erbB-2 including HER2, transferin receptor, TNF-receptor, high molecular weight antigen, p95-100, sarcoma antigens including TP-1 and TP-3 epitope, Mv 200kD, Mv160kD, MOC-31 epitope including cluster 2 epithelial antigen, MUC-1 antigen including DF3-epitope and gp290kD, prostate high molecular antigen, TAG 72, bladder carcinoma antigen, Mv 48kD colorectal carcinoma antigen, lung carcinoma antigen Mv 350-420kD, Mel-14 epitope, $ß_2$-microglobulin, Apo-1 epitope, or pan-human cell antigen.

J2

sub J3

46. (Four Times Amended) A kit for performing the method of claim 22, the kit comprising:

a. a first antibody, wherein said first antibody is a specific monoclonal antibody or antibody fragment directed against a second antibody or

antibody fragment, said first antibody effective for coating a paramagnetic particle or bead without removing its antigen-binding ability;

b. a paramagnetic particle or bead; and

c. the second antibody, wherein said second antibody is a specific monoclonal antibody or antibody fragment directed against an antigen or a receptor within or on the target cell;

wherein said second antibody or antibody fragment is conjugated to a detectable label.

J3

59. (Twice Amended) The method of claim 22, wherein the second antibody or antibody fragment directed against a membrane structure specifically expressed on the target cell is a murine or a human antibody or fragment thereof.

J4

62. (Four Times Amended) The method of claim 22, wherein the method further comprises after incubating, applying a magnetic field to separate out the target cell-bead rosettes.

J5

64. (Twice Amended) The method of claim 22, wherein visually detecting includes counting the target cell-bead rosettes using a microscope or a cell or particle counting device.

J6

80. (Amended) The method according to claim 22 further comprising after incubating; detecting a second antigen of the target cell by adding a second labeled monoclonal antibody directed to the second antigen to the cell suspension; and quantitating the amount of labeled second monoclonal antibody bound to the rosettes.

J7

83. (Amended) The method according to claim 22, further comprising before mixing; prelabeling the target cells with a labeled second monoclonal antibody to second antigen on the target cell; and after incubating, quantitating the amount labeled second monoclonal antibody bound to the rosettes.

J8

J8 cont

84. (Amended) The method according to claim 22, further comprising after incubating, applying a magnetic field to separate out the target cell bead rosettes; and detecting target cells specific genes at the DNA, mRNA or protein level.

87. (Three Times Amended) A method for detecting living tumor cells in a cell suspension of mixed cell population or in a cell suspension prepared from a solid tissue, at a sensitivity of one target cell per 100 or more total cells, with the exception of normal and malignant hematopoietic cells in blood and bone marrow, comprising:

a) coating paramagnetic particles with a first antibody or fragment directed against a second tumor-specific monoclonal antibody or fragment;

b) incubating the second tumor specific antibody or antibody fragment with the cell suspension to allow the second tumor specific antibody or antibody fragment to bind the tumor cells;

J9

c) washing the cell suspension to remove unbound second antibody or antibody fragment;

d) mixing the coated paramagnetic particles with the cell suspension;

e) incubating the mixture at about 4°C under gentle rotation until tumor cell-bead rosettes are formed; and

f) visually detecting the tumor cell-bead rosettes.

88. (Amended) The method according to claim 87 further comprising after incubating; applying a magnetic field to the mixture to separate out the tumor cell-bead rosettes.

J10

89. (Amended) The method according to claim 87, wherein the tumor-specific monoclonal antibody is specific for tumor antigens comprising a growth factor receptor, an oncogene product expressed on the membrane of a malignant cell, an adhesion membrane molecule, an MDR protein, breast, ovarian or lung carcinoma cells; melanoma, sarcoma, glioblastoma or cancer cells of the gastrointestinal tract; melanoma, sarcoma, glioblastoma or cancer cells of the genitourinary tract; or melanoma, sarcoma, glioblastoma or cancer cells of the reticuloendothelial system.

91. (Amended) The method according to claim 87 further comprising, after incubating; detecting a second antigen on the tumor cell by adding a labeled second monoclonal antibody specific for the second antigen to the cell suspension; and quantitating the amount of labeled second monoclonal antibody bound to the tumor cell-bead rosettes.

J11

96. (Amended) The method according to claim 87, wherein the mixture is incubated for about 30 minutes.

97. (Amended) The method according to claim 91, wherein the tumor cell-bead rosettes are quantitated by counting them using a microscope or a cell or particle counting device.

J12

98. (Amended) The method according to claim 91 further comprising after quantitating; culturing the tumor cell-bead rosettes in a growth medium until a cell culture is established.

100. (Amended) The method according to claim 97, wherein the labeled third monoclonal antibody is labeled with floureseeine, a radioactive compound, biotin or an enzyme.

J13

101. (Amended) The method according to claim 22, further comprising after incubating; applying a magnetic field to the mixture to separate out the target cell-bead rosettes; and detecting target cell specific genes.

104. (Amended) The method according to claim 22 further comprising, after step (e); applying a magnetic field to the mixture to separate out target cell-bead rosettes; and culturing the target cell-bead rosettes in a growth medium to establish a cell culture.

J14

117. (Amended) A kit for performing the method of claim 22, the kit comprising:

a. a first antibody, wherein said first antibody is a specific monoclonal antibody or antibody fragment directed against a second antibody or antibody fragment, said first antibody effective for coating a paramagnetic particle or bead without removing its antigen-binding ability;

b. a paramagnetic particle or bead; and

c. the second antibody, wherein said second antibody is a specific monoclonal antibody or antibody fragment directed against an antigen or a receptor within or on the target cell, wherein the second antibody or antibody fragment is directed against fibronectin receptor, β-integrin, vitronectin receptor, αγß3-integrin, P-seletin including GMP-140, CD44-variants, N-CAM including CD-56, E-cadherin, Le^y, carcinoembryonic antigen or CEA, EGF receptor, c-erbB-2 including HER2, transferin receptor, TNF-receptor, high molecular weight antigen, p95-100, sarcoma antigens including TP-1 and TP-3 epitope, Mv 200kD, Mv160kD, MOC-31 epitope including cluster 2 epithelial antigen, MUC-1 antigen including DF3-epitope and gp290kD, prostate high molecular antigen, TAG 72, bladder carcinoma antigen, Mv 48kD colorectal carcinoma antigen, lung carcinoma antigen Mv 350-420kD, Mel-14 epitope, $ß_2$-microglobulin, Apo-1 epitope, or pan-human cell antigen;

wherein said second antibody or antibody fragment is conjugated to a detectable label.

K2 JHS cont